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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/774,686	02/01/2001	Shigeki Watanabe	837.1960/JDH	3081

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EXAMINER	
PHAN, HANH	
ART UNIT	**PAPER NUMBER**
2633	3

DATE MAILED: 02/25/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/774,686	WATANABE, SHIGEKI	
	Examiner	Art Unit	
	Hanh Phan	2633	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *01 February 2001*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-32* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-32* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1, 3-6, 10, 12, 14, 16-19, 22, 24 and 26-30 are rejected under 35 U.S.C. 102(e) as being anticipated by Mamyshev (US Patent No. 6,141,129).

Regarding claims 1, 14 and 26, referring to Figures 1-11, Mamyshev discloses a method comprising the steps of:

inputting an optical signal into an optical waveguide structure (i.e., a nonlinear medium NLM 12, Fig. 1) for providing a nonlinear effect;

generating chirp in the optical signal by the nonlinear effect (Fig. 2); and

supplying an output optical signal output from the optical waveguide structure to an optical filter (i.e., optical regenerator bandpass filter 14, Fig. 1) to remove a

component in which the chirp is small from the output optical signal (see from col. 3, line 35 to col. 7, line 6 and see from col. 8, line 28 to col. 11, line 30).

Regarding claims 3 and 16, Mamyshev further teaches the optical filter comprises an optical bandstop filter having a center wavelength substantially coinciding with the center wavelength of the optical signal (Figs. 1-11).

Regarding claims 4 and 17, Mamyshev teaches further comprising the step of supplying the output optical signal to an optical bandpass filter to remove a component in which the chirp is larger than that in a main slope portion of a pulse of the optical signal (Figs. 1-11).

Regarding claims 5 and 18, Mamyshev teaches further comprising the step of supplying the optical signal to be input into the optical waveguide structure to an optical filter to remove a noise component outside of a signal band in the optical signal (Figs. 1 and 2).

Regarding claims 6 and 19, Mamyshev teaches further comprising the step of optically amplifying the optical signal to be input into the optical waveguide structure so that a required amount of chirp is obtained (Figs. 1 and 2).

Regarding claims 10 and 22, Mamyshev further teaches the step of performing pulse compression on the optical signal to be input into the optical waveguide structure (Figs. 1, 2 and 4).

Regarding claims 12, 24 and 29, Mamyshev further teaches the optical signal to be input into the optical waveguide structure comprises WDM signal light obtained by wavelength division multiplexing a plurality of optical signals (Fig. 1).

Regarding claim 27, Mamyshev further teaches a second optical fiber transmission line for transmitting the output optical signal (Fig. 11).

Regarding claim 28, Mamyshev further teaches an optical transmitter connected to an input end of the optical fiber transmission line, and an optical receiver connected to an output end of the second optical fiber transmission line (Fig. 1)

Regarding claim 30, Mamyshev further teaches each of the optical fiber transmission line and the second optical fiber transmission line comprises an optical amplifier repeater transmission line including at least one optical amplifier (Figs. 1-11).

4. Claims 1-8, 10-20, 22-26 and 29 are rejected under 35 U.S.C. 102(e) as being anticipated by Hamaide et al (US Patent No. 6,408,114).

Regarding claims 1, 14 and 26, referring to Figures 1, 2 and 4, Hamaide discloses a method comprising the steps of:

inputting an optical signal into an optical waveguide structure (i.e., transmission line 7 is made up of legs TF of a dispersion-managed transmission optical fiber, Fig. 1) for providing a nonlinear effect;

generating chirp in the optical signal by the nonlinear effect (Fig. 1, col. 1, lines 40-56); and

supplying an output optical signal output from the optical waveguide structure to an optical filter (i.e., stabilizer equipment 9, Figs. 1 and 2) to remove a component in which the chirp is small from the output optical signal (see from col. 3, line 65 to col. 6, line 5).

Regarding claims 2 and 15, Hamaide further teaches the optical waveguide structure comprises an optical fiber for providing normal dispersion (Fig. 1, col. 4, lines 15-33).

Regarding claims 3 and 16, Hamaide further teaches the optical filter comprises an optical bandstop filter having a center wavelength substantially coinciding with the center wavelength of the optical signal (col. 4, lines 55-62).

Regarding claims 4 and 17, Hamaide teaches further comprising the step of supplying the output optical signal to an optical bandpass filter to remove a component in which the chirp is larger than that in a main slope portion of a pulse of the optical signal (see from col. 3, line 65 to col. 6, line 5).

Regarding claims 5 and 18, Hamaide teaches further comprising the step of supplying the optical signal to be input into the optical waveguide structure to an optical filter to remove a noise component outside of a signal band in the optical signal (col. 5, lines 26-32).

Regarding claims 6 and 19, Hamaide teaches further comprising the step of optically amplifying the optical signal to be input into the optical waveguide structure so that a required amount of chirp is obtained (see Figs. 1, 2 and 4).

Regarding claims 7 and 20, Hamaide teaches further comprising the step of supplying the output optical signal to a dispersion compensator so that the output optical signal undergoes dispersion compensation (see Figs. 1 , 2 and 4).

Regarding claim 8, Hamaide further teaches the optical waveguide structure comprises a first optical fiber for providing normal dispersion; and dispersion compensator comprises a second optical fiber for providing anomalous dispersion; the method further comprising the step of adjusting a dispersion and input power of the second optical fiber so that pulse compression is performed to such an extent that a defect near the pulse peak of an optical signal output from the second optical fiber is reduced (see from col. 3, line 65 to col. 6, line 5).

Regarding claims 10 and 22, Hamaide further teaches the step of performing pulse compression on the optical signal to be input into the optical waveguide structure (Figs. 1, 2 and 4).

Regarding claims 11 and 23, Hamaide further teaches the pulse compression performing step comprises the step of passing the optical signal through a first optical fiber for providing normal dispersion and a second optical fiber for providing anomalous dispersion (Fig. 1).

Regarding claims 12, 24 and 29, Hamaide further teaches the optical signal to be input into the optical waveguide structure comprises WDM signal light obtained by wavelength division multiplexing a plurality of optical signals (Fig. 1).

Regarding claims 13 and 25, Hamaide further teaches the optical waveguide structure comprises an optical fiber for providing normal dispersion, the optical fiber having a dispersion large enough to eliminate the occurrence of crosstalk between channels of sthe WDM signal light (Figs. 1, 2 and 4).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 2, 7-9, 11, 13, 15, 20, 21, 23, 25, 31 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over of Mamyshev (US Patent No. 6,141,129) in view of Hamaide et al (US Patent No. 6,408,114).

Regarding claims 2 and 15, Mamyshev discloses all the aspects of the claimed invention except fails to teach the optical waveguide structure comprises an optical fiber for providing normal dispersion. However, Hamaide teaches the optical waveguide structure comprises an optical fiber for providing normal dispersion (Fig. 1, col. 4, lines 15-33). Therefore, it would have been obvious to one having skill in the art at the time the invention was made to incorporate the optical waveguide structure comprises an optical fiber for providing normal dispersion as taught by Hamaide in the system of Mamyshev. One of ordinary skill in the art would have been motivated to do this since Hamaide suggests in column 4, lines 15-33 that using such the optical waveguide structure comprises an optical fiber for providing normal dispersion have advantage of allowing compensating the dispersion of the signal.

Regarding claims 7 and 20, the combination of Mamyshev and Hamaide teaches further comprising the step of supplying the output optical signal to a dispersion

compensator so that the output optical signal undergoes dispersion compensation (see Figs. 1 , 2 and 4 of Hamaide).

Regarding claim 8, the combination of Mamyshev and Hamaide teaches the optical waveguide structure comprises a first optical fiber for providing normal dispersion; and dispersion compensator comprises a second optical fiber for providing anomalous dispersion; the method further comprising the step of adjusting a dispersion and input power of the second optical fiber so that pulse compression is performed to such an extent that a defect near the pulse peak of an optical signal output from the second optical fiber is reduced (see from col. 3 of Hamaide, line 65 to col. 6, line 5).

Regarding claims 9 and 21, the combination of Mamyshev and Hamaide teaches the step of supplying the optical signal output from the second optical fiber to an optical bandpass filter so that the pulse width of the optical signal output from the second optical fiber substantially coincides with the pulse width of the optical signal input into the first optical fiber (Fig. 11 of Mamyshev, col. 10, lines 46-67 and col. 11, lines 1-30).

Regarding claims 11 and 23, the combination of Mamyshev and Hamaide teaches the pulse compression performing step comprises the step of passing the optical signal through a first optical fiber for providing normal dispersion and a second optical fiber for providing anomalous dispersion (Fig. 1 of Hamaide).

Regarding claims 13 and 25, the combination of Mamyshev and Hamaide teaches the optical waveguide structure comprises an optical fiber for providing normal dispersion, the optical fiber having a dispersion large enough to eliminate the

occurrence of crosstalk between channels of sthe WDM signal light (Figs. 1, 2 and 4 of Hamaide).

Regarding claims 31 and 32, the combination of Mamyshev and Hamaide teaches the optical waveguide structure comprises a first optical fiber for providing normal dispersion; the method further comprising the step of amplifying an optical signal output from the optical filter and supplying an amplified optical signal to a second optical fiber for providing normal dispersion (Fig. 8 of Mamyshev).

7. Claims 9, 21, 27, 28 and 30-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hamaide et al (US Patent No. 6,408,114) in view of Mamyshev (US Patent No. 6,141,129).

Regarding claims 9, 21 and 27, Hamaide discloses all the aspects of the claimed invention except fails to teach the step of supplying the optical signal output from the second optical fiber to an optical bandpass filter so that the pulse width of the optical signal output from the second optical fiber substantially coincides with the pulse width of the optical signal input into the first optical fiber. However, Mamyshev teaches the step of supplying the optical signal output from the second optical fiber to an optical bandpass filter so that the pulse width of the optical signal output from the second optical fiber substantially coincides with the pulse width of the optical signal input into the first optical fiber (Fig. 11, col. 10, lines 46-67 and col. 11, lines 1-30). Therefore, it would have been obvious to one having skill in the art at the time the invention was made to incorporate the step of supplying the optical signal output from the second

optical fiber to an optical bandpass filter so that the pulse width of the optical signal output from the second optical fiber substantially coincides with the pulse width of the optical signal input into the first optical fiber as taught by Mamyshev in the system of Hamaide. One of ordinary skill in the art would have been motivated to do this since Mamyshev suggests in column 10, lines 46-67 and col. 11, lines 1-30 that using such supplying the optical signal output from the second optical fiber to an optical bandpass filter have advantage of allowing selecting the wanted signal and eliminating the signal noise and increasing the signal to noise ratio.

Regarding claim 28, the combination of Hamaide and Mamyshev teaches an optical transmitter connected to an input end of the optical fiber transmission line, and an optical receiver connected to an output end of the second optical fiber transmission line (Fig. 1 of Hamaide and Fig. 1 of Mamyshev).

Regarding claim 30, the combination of Hamaide and Mamyshev teaches each of the optical fiber transmission line and the second optical fiber transmission line comprises an optical amplifier repeater transmission line including at least one optical amplifier (Fig. 1 of Hamaide and Fig. 11 of Mamyshev).

Regarding claims 31 and 32, the combination of Hamaide and Mamyshev teaches the optical waveguide structure comprises a first optical fiber for providing normal dispersion; the method further comprising the step of amplifying an optical signal output from the optical filter and supplying an amplified optical signal to a second optical fiber for providing normal dispersion (Fig. 8 of Mamyshev).

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Franco et al (US Patent No. 6,538,788) discloses method for reduce noise.

Golovchenko et al (US Patent No. 6,243,181) discloses reduction of collision induced timing jitter by periodic dispersion management in soliton WDM transmission.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hanh Phan whose telephone number is (703)306-5840.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan, can be reached on (703)305-4729. The fax phone number for the organization where this application or proceeding is assigned is (703)872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)305-4700.

Hanhphan

Hanh Phan

02/18/2004